ABSTRACT

CHARACTERIZATION OF p-METHOXYCINNAMIC ACID-β-CYCLODEXTRIN PREPARED USING FREEZE DRYING METHOD

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In an effort to improve the solubility of para-methoxycinnamic acid, a 1:1 freeze-dried complex was prepared with para-methoxycinnamic acid and β-cyclodextrin. To confirm complex formation, complex was characterized by Powder X-ray Diffraction (PXRD), Fourier Transform Infrared Spectroscopy (FT-IR), Differential Thermal Analysis (DTA) and UV-Visible Spectroscopy compared to its single compound and physical mixture. The PXRD, FT-IR, DTA, and UV-Visible Spectroscopy result of inclusion complex showed different characteristics. Means that inclusion complex of para-methoxycinnamic acid-β-cyclodextrin has been formed. PXRD diffractogram of inclusion complex showed loss of some peaks and less intensity compared to physical mixture. FT-IR spectra showed that the intensity band of carbonyl group from para-methoxycinnamic acid at 1687,39 cm^{-1} was decreased. Meanwhile the DTA study showed the decrease of intensity and broadened peak for inclusion complex compared with single compound and physical mixture. UV spectra profile of inclusion complex showed no difference with para-methoxycinnamic acid. However, the para-methoxycinnamic acid content in inclusion complex was determined as 101,42 % as its result.

Keywords : inclusion complex, para-methoxycinnamic acid, β-cyclodextrin, freeze drying, characterization